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sible *šûliku* = *šûlik*. Hilprecht's application of the meaning "number" to the Hebrew *mîn* cannot be justified by Hebrew or Semitic usage. (4) No inferences of any importance to Biblical study, or bearing upon the origin of the Priestly version of the Deluge Story in Genesis can be drawn from this little fragment. Nevertheless the author is to be congratulated upon the discovery of a fragment of a new Deluge Story in the Nippur Collection. It is possible that something may be added to it when the collection is thoroughly examined.

James A. Craig.

University of Michigan, June, 1910.

Matter and Memory. By *Henri Bergson.* Authorized Translation by *Nancy Margaret Paul* and *W. Scott Palmer.* London: Sonnenschein, 1911. Pp. 339. Price, 10s. 6d. net.

Henri Bergson, a member of the Institute and professor at the College of France, is broadly before the public, and he proposes a philosophy which is strongly opposed to the traditional views. He claims that science is not and ought not to be monistic, and will naturally be considered as reactionary by scientists as well as monistic thinkers. His book on *Matter and Memory* fairly characterizes the trend of Bergson's thought, and considering that fact and his significance at the present day, we will quote a number of passages which indicate both his arguments and conclusions.

He says:

"This book affirms the reality of spirit and the reality of matter, and tries to determine the relation of the one to the other by the study of a definite example, that of memory. It is, then, frankly dualistic. But, on the other hand, it deals with body and mind in such a way as, we hope, to lessen greatly, if not to overcome, the theoretical difficulties which have beset dualism.... Realism and idealism both go too far, [and] it is a mistake to reduce matter to the perception which we have of it, a mistake also to make of it a thing able to produce in us perceptions, but in itself of another nature than they. Matter, in our view, is an aggregate of 'images.' And by 'image' we mean a certain existence which is more than that which the idealist calls a *representation,* but less that which the realist calls a *thing,*—an existence placed half-way between the 'thing' and the 'representation.'"

Bergson's idea of matter differs from common usage as is seen from the following quotation:

"Pure perception, which is the lowest degree of mind,—mind without memory—is really part of matter, as we understand matter. We may go further: memory does not intervene as a function of which matter has no presentiment and which it does not imitate in its own way."

The argument of the whole book hinges upon an explanation of memory as distinguished from perception. Between the two is the function of sensory image. On page 170 he says:

"Perception is never a mere contact of the mind with the object present; it is impregnated with memory-images which complete it as they interpret it. The memory-image, in its turn, partakes of the 'pure memory,' which it begins to materialize, and of the perception in which it tends to embody itself:

regarded from the latter point of view, it might be defined as a nascent perception. Lastly, pure memory, though independent in theory, manifests itself as a rule only in the colored and living image which reveals it."

The difference between Bergson's view and other interpretations appears best in his explanation of attention and the act of cognition, which is greatly helped by memory. He says:

"Attentive perception is often represented as a series of processes which make their way in single file; the object exciting sensations, the sensations causing ideas to start up before them, each idea setting in motion, one in front of the other, points more and more remote of the intellectual mass. Thus there is supposed to be a rectilinear process, by which the mind goes further and further from the object, never to return to it. We maintian, on the contrary, that reflective perception is a *circuit,* in which all the elements, including the perceived object itself, hold each other in a state of mutual tension as in an electric circuit, so that no disturbance starting from the object can stop on its way and remain in the depths of the mind: it must always find its way back to the object whence it proceeds. Now, it must not be thought that this is a mere matter of words. We have here two radically different conceptions of the intellectual process. According to the first, things happen mechanically, and by a merely accidental series of successive additions.... In the second, on the contrary, an act of attention implies such a solidarity between the mind and its object, it is a circuit so well closed, that we cannot pass to states of higher concentration without creating, whole and entire, so many new circuits which envelop the first and have nothing in common between them but the perceived object....Memory, capable, by reason of its elasticity, of expanding more and more, reflects upon the object a growing number of suggested images,—sometimes the details of the object itself, sometimes concomitant details which may throw light upon it. Thus, after having rebuilt the object perceived, as an independent whole, we reassemble, together with it, the more and more distant conditions with which it forms one system."

His theory of spirit may briefly be described in a passage on pages 312 to 313:

"As long as we confine ourselves to sensation and to pure perception, we can hardly be said to be dealing with the spirit. No doubt we demonstrate, as against the theory of an epiphenomenal consciousness, that no cerebral state is the equivalent of a perception. No doubt the choice of perceptions from among images in general is the effect of a discernment which foreshadows spirit. No doubt also the material universe itself, defined as the totality of images, is a kind of consciousness, a consciousness in which everything compensates and neutralizes everything else, a consciousness of which all the potential parts, balancing each other by a reaction which is always equal to the action, reciprocally hinder each other from standing out. But to touch the reality of spirit we must place ourselves at the point where an individual consciousness, continuing and retaining the past in a present enriched by it, thus escapes the law of necessity, the law which ordains that the past shall ever follow itself in a present which merely repeats it in another form, and that all things shall ever be flowing away. When we pass from pure perception to memory, we definitely abandon matter for spirit."

He distinguishes between pure perception and remembrance, stating that in the former the perceived object is present. It is a body which modifies our own, while the latter is a representation of an absent object, and there are two hypotheses with opposite consequences. Professor Bergson says:

"If, in the case of a present object, a state of our body is thought sufficient to create the representation of the object, still more must it be thought so in the case of an object that is represented though absent. It is necessary therefore, on this theory, that the remembrance should arise from the attenuated repetition of the cerebral phenomenon which occasioned the primary perception, and should consist simply in a perception weakened. Whence this double thesis: Memory is only a function of the brain, and there is only a difference of intensity between perception and recollection."

The opposite of this hypothesis reads thus:

"Memory is something other than a function of the brain, and there is not merely a difference of degree, but of kind, between perception and recollection."

Professor Bergson is opposed to the mechanical theory of life, and he thinks that memory does not depend on the brain. He opposes the theory of parallelism, and refutes it by the following argument:

"That there is a close connection between a state of consciousness and the brain we do not dispute. But there is also a close connection between a coat and the nail on which it hangs, for, if the nail is pulled out, the coat falls to the ground. Shall we say, then, that the shape of the nail gives us the shape of the coat, or in any way corresponds to it? No more are we entitled to conclude, because the physical fact is hung on to a cerebral state, that there is any parallelism between the two series psychical and physiological." *κ*

LES ROCHES ET LEURS ÉLÉMENTS MINÉRALOGIQUES. Par *Ed. Jannettaz.* Paris: A. Hermann, 1910. Pp. 704. With twenty colored and eight uncolored plates, 322 figures and 2 geological maps. Price, 8 fr.

Geology is one of the most interesting of the sciences and, as the author of the volume before us says in his preface, the necessity of the knowledge of the elements which make up the crust of the earth, is evident not only to chemists, geologists, and miners who are directly interested in it, but even to the sculptor who is in search of a fine statuary marble, to the architect who should familiarize himself first with the constitution of the soil upon which he builds and then with that of the materials in the construction and adornment of buildings, and finally to the agriculturist who must not be in ignorance of the quality of the arable lands to which he entrusts his seed.

M. Jannettaz is a lecturer at the Sorbonne and is connected with the museum of that institution. He has here undertaken to give a complete treatise on the entire subject of rocks that will prove satisfactory to those who wish to enter upon the study.

The book is divided into three parts. The first may be regarded as an elementary treatise on physical chrystallography; the second on a compendium of mineralogy, and the third is devoted to a description of rocks. In an appendix is given the method of determining rocks, also tables of the characteristics of their elements, a chronological list of eruptive and sedimentary rocks, and a bibliography. *ρ*